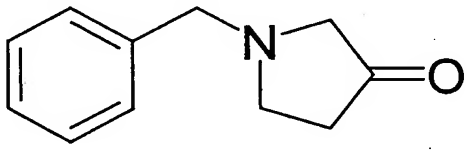
CLAIMS

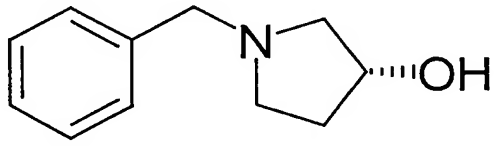
1. A polypeptide having the following physical and chemical properties (1) to (4):

(1) activity: stereoselectively reducing N-benzyl-3-pyrrolidinone represented by the formula (1):



(1)

with NADH or NADPH as a coenzyme, to form (R)-N-benzyl-3-pyrrolidinol represented by the formula (2):



(2) ;

(2) optimum pH for activity: 5.5 to 6.0;

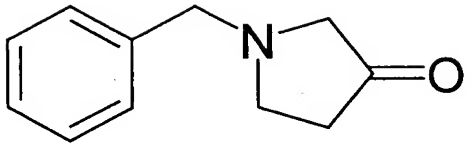
(3) optimum temperature for activity: 50°C to 55°C;

(4) molecular weight: about 55,000 as determined by gel filtration analysis, about 28,000 as determined by SDS polyacrylamide gel electrophoresis analysis.

2. A polypeptide which is the following (a) or (b):

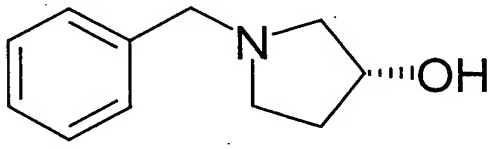
(a) a polypeptide comprising the amino acid sequence shown under SEQ ID NO:1 in the sequence listing or

(b) a polypeptide comprising the amino acid sequence shown under SEQ ID NO:1 in the sequence listing or an amino acid sequence resulting from substitution, insertion, deletion or addition of one or several amino acid residues in the amino acid sequence shown under SEQ ID NO:1 in the sequence listing and having activity in stereoselectively reducing N-benzyl-3-pyrrolidinone represented by the formula (1):



(1)

to form (R)-N-benzyl-3-pyrrolidinol represented by the formula (2):



(2)

3. The polypeptide according to Claim 1 or 2 which is derived from a microorganism belonging to the genus Devosia.

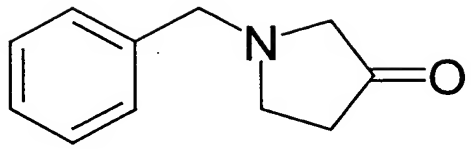
4. The polypeptide according to Claim 3, wherein the microorganism belonging to the genus Devosia is Devosia riboflavina IFO 13584.

5. A polynucleotide which codes for the polypeptide according to any one of Claims 1 to 4.

6. A polynucleotide which is the following (c) or (d):

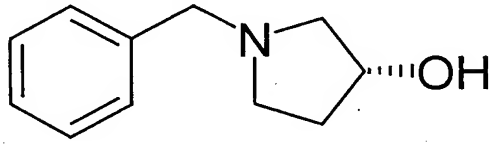
(c) a polynucleotide comprising the base sequence shown under SEQ ID NO:2 in the sequence listing or

(d) a polynucleotide capable of hybridizing with a polynucleotide comprising the base sequence complementary to the base sequence shown under SEQ ID NO:2 in the sequence listing under stringent conditions and coding for a polypeptide having activity in stereoselectively reducing N-benzyl-3-pyrrolidinone represented by the formula (1):



(1)

to form (R)-N-benzyl-3-pyrrolidinol represented by the formula (2):



(2)

7. An expression vector which contains the polynucleotide according to Claim 5 or 6.

8. The expression vector according to Claim 7 which is a plasmid pNTDR.

9. The expression vector according to Claim 7 which further contains a polynucleotide coding for a polypeptide having glucose dehydrogenase activity.

10. The expression vector according to Claim 9, wherein the polypeptide having glucose dehydrogenase activity is a glucose dehydrogenase derived from Bacillus megaterium.

11. The expression vector according to Claim 10 which is a plasmid pNTDRG1.

12. A transformant which is obtainable by transforming a host cell using the expression vector according to any one of Claims 7 to

11.

13. The transformant according to Claim 12, wherein the host cell is Escherichia coli.

14. The transformant according to Claim 13 which is E. coli HB101(pNTDR) (FERM BP-08457).

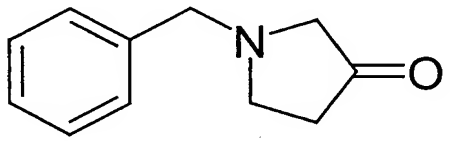
15. The transformant according to Claim 13 which is E. coli HB101(pNTDRG1) (FERM BP-08458).

16. A method for producing an optically active alcohol

which comprises reacting the culture of the transformant according to any one of Claims 12 to 15 or a processed product thereof with a carbonyl group-containing compound.

17. The method according to Claim 16,

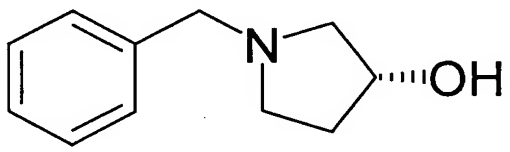
wherein the carbonyl group-containing compound is N-benzyl-3-pyrrolidinone represented by the formula (1):



(1)

and

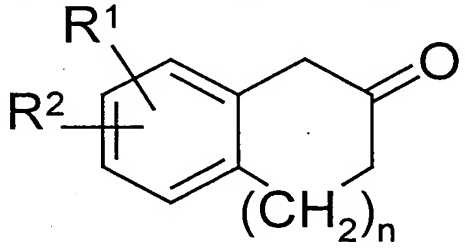
the above optically active alcohol is (R)-N-benzyl-3-pyrrolidinol represented by the formula (2):



(2)

18. The method according to Claim 16,

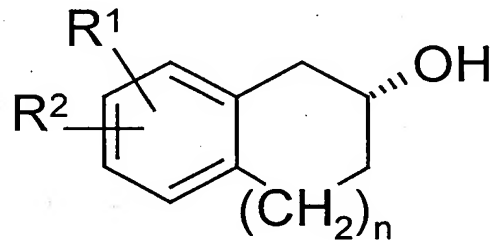
wherein the carbonyl group-containing compound is a 2-tetralone derivative represented by the formula (3):



(3)

in the formula, R^1 and R^2 may be the same or different and each represents a hydrogen atom, a hydroxyl group or alkoxy group, and n represents 1 or 2, and

the above optically active alcohol is a 2-tetralol derivative represented by the formula (4):



(4)

in the formula, R^1, R^2 and n are the same as defined above.

19. The method according to Claim 18,

wherein the above 2-tetralone derivative is 7-methoxy-2-tetralone, and the above 2-tetralol derivative is (R)-7-methoxy-2-tetralol.

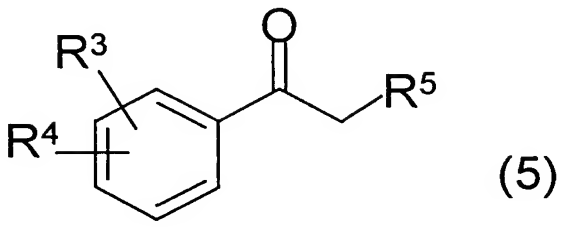
20. The method according to Claim 18,

wherein the above 2-tetralone derivative is 3-methoxy-6, 7, 8, 9-tetrahydro-5H-benzocycloheptene-6-one, and the above 2-tetralol derivative is (R)-3-methoxy-6, 7, 8, 9-tetrahydro-5H-benzocycloheptene-6-ol.

21. The method according to Claim 16,

wherein the above carbonyl group-containing compound

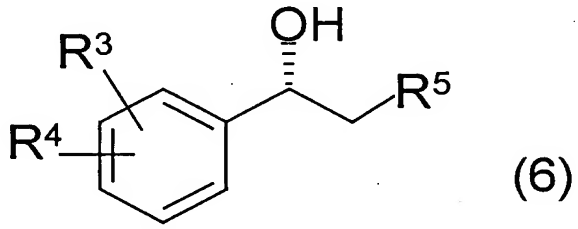
is a 1-phenylethanone derivative represented by the general formula (5):



(5)

in the formula, R^3 and R^4 may be the same or different and each represents a hydrogen or halogen atom or an alkoxy or nitro group, R^5 represents a hydrogen or halogen atom, a hydroxyl group or an alkyl group, which may optionally be substituted, and

the above optically active alcohol is a 1-phenylethanol derivative represented by the general formula (6):



(6)

in the formula, R^3, R^4 and R^5 are the same as defined above.

22. The method according to Claim 21,

wherein the above 1-phenylethanone derivative is 2-chloro-1-(4'-fluorophenyl)ethanone, and the above 1-phenylethanol derivative is (S)-2-chloro-1-(4'-fluorophenyl)ethanol.

23. The method according to Claim 21,

wherein the above 1-phenylethanone derivative is 2-chloro-1-(3'-chlorophenyl)ethanone, and the above 1-phenylethanol derivative is (S)-2-chloro-1-(3'-chlorophenyl)ethanol.